Political uncertainty and institutional herding

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Abstract

Political uncertainty is a key determinant of investment decisions. Specifically, the uncertainty that surrounds government policy makes beliefs noisier and depresses stock prices. In this paper, we explore whether institutional investors "herd", i.e., mimic each other's trades, in response to political uncertainty. Using U.S. institutional investors' quarterly holding data from 1985 through 2019, we find evidence consistent with our conjecture. We also find that the results are stronger in times of low presidential popularity, and among companies that are politically sensitive. Overall, the findings suggest that the effect of political uncertainty on financial markets is larger than previously thought.

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1. Introduction

Political uncertainty is a key determinant of corporate investment decisions, both from a micro and a macro perspective (Rodrik, 1991; Hasset and Mecalf, 1999). For example, companies decrease their investment when political uncertainty is high (Julio and Yook, 2012; Jens 2017), because they find it optimal to defer investment until uncertainty has been resolved (see, e.g., Bernanke, 1983; Bloom, Bond, and Van Reenen, 2007). The uncertainty that surrounds government policy also affects investor beliefs (Pástor and Veronesi, 2012, 2013), commands a risk premium (Pástor and Veronesi, 2013; Brogaard and Detzel, 2015; Kelly, Pástor, and Veronesi, 2016), and increases volatility in international financial markets (Boutchkova, Doshi, Durnev, and Molchanov, 2012). In light of these pervasive real and financial effects, political uncertainty plays an important role in the economy at large.

In this paper, we explore whether political uncertainty also affects trading behavior. Specifically, we analyze whether institutional investors "herd", i.e., mimic each other's trades, in response to political uncertainty. Our conjecture builds on two well-known mechanisms. First, noisier signals constitute an incentive

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for institutional investors to herd more (Wermers, 1999; Sias, 2004).[1] Second, institutional investors face reputational and litigation costs when their behavior deviates from the herd (Scharfstein and Stein, 1990; Trueman, 1994), particularly in the presence of negative stock information, as the latter increases the chance of realizing losses (Brown, Wei, and Wermers, 2014).[2] Since political uncertainty makes investor beliefs noisier and depresses stock prices (Pástor and Veronesi, 2013), we expect both motivating mechanisms of herding to be operational during politically uncertain times.

Using U.S. institutional investors' quarterly holding data from 1985 through 2019, we find evidence consistent with our conjecture. We find a positive and large association between stock-level institutional herding and political uncertainty, controlling for a number of financial, economic, and political indicators. For brevity, we denote this relation as "politically-motivated herding". We also find that the estimates are of higher magnitude in times of low presidential popularity, which supports the view that unpopular administrations have a proclivity for riskier policies as a form of gambling for resurrection (see, e.g., Downs and Rocke, 1994; Pástor and Veronesi, 2013).

Consistent with the idea that institutional herding partly reflects similar investment styles (Choi and Sias, 2009; Celiker, Chowdhury, and Sonaer, 2015), we also identify a number of stock-level patterns. We find that politically-motivated herding is significantly stronger for riskier stocks, defined as those characterized by small market capitalization and weak political connections. We also find that such herding is more pronounced for politically-sensitive stocks, but only under Republican presidencies, which supports the extant evidence that these administrations are characterized by higher risk (Blinder and Watson, 2016; Pástor and Veronesi, 2018).

Political uncertainty's impact over the propensity of fund managers to herd is largely fueled by established herding drivers. Investment professionals herd intentionally as a response to uncertainty in the marketplace. This uncertainty is often of an informational nature (Devenow and Welch, 1996). When the information signals available are noisy, fund managers may choose to mimic the trades of their peers (either because their processing skills are inadequate or because their peers are better-informed). In the process, they sideline their private signals and give rise to informational cascades (Banerjee, 1992; Bikhchandani, Hirshleifer, and Welch, 1992).

Alternatively, this uncertainty may bear a professional connotation. In view of the periodic performance evaluation of investment professionals, low-quality fund managers may resort to tracking the trades of their high-quality peers in order to emit an image of competence and safeguard their career prospects (Scharfstein and Stein, 1990; Jiang and Verardo, 2018). This is expected to be more so in the presence of negative news' arrival, since this is associated with a greater potential for losses – and for reputational/litigation risk

[1] For more on how informational ambiguity can motivate herding, see the analytical studies by Banerjee (1992) and Bikhchandani, Hirshleifer, and Welch (1992), and the herding review by Hirshleifer and Teoh (2003).

[2] For example, bank trust departments engage in herd behavior to defend the prudence of their investments, thus minimizing litigation risk (Sias, 2004).

(Brown, Wei, and Wermers, 2014).[3]

In this paper, we explore politics as a source of uncertainty that can motivate herding on behalf of fund managers. Pástor and Veronesi (2012) identify two types of political uncertainty that affect investor behavior. These are the uncertainty about whether the current government policy will change, and about the impact that government policy will have on the profitability of the private sector. The overall effect of these two types of uncertainty is to make beliefs noisier, and depress asset prices (Pástor and Veronesi, 2013). As a result, we expect fund managers to herd more in times of high political uncertainty, in an attempt to infer information from each other's trades and avoid holding losing stocks.

To estimate institutional herding at the stock-level, we follow the methodology from Sias (2004). Using U.S. 13F institutional investors' holding data, we calculate each institutional investor's end-of-quarter position in each security as a fraction of the security's shares outstanding. For each quarter, we then calculate (and standardize) the fraction of institutional investors that are net buyers of any given stock, and regress it on the fraction from the previous quarter. We then partition this first-order autocorrelation of institutional demand into the genuine herding component and the part due to institutions following their own past trades. We respectively consider stocks with at least 1, 5, 10, and 20 institutional traders, which generates four herding measures overall.

As in Pástor and Veronesi (2013), we primarily proxy political uncertainty with the U.S. economic policy uncertainty index from Baker, Bloom, and Davis (2016). The index is based on three components: coverage of policy-related economic uncertainty on ten U.S. major newspapers, the number of federal tax code provisions set to expire in future years, and disagreement among economic forecasters. As such, this index captures the two aforementioned types of political uncertainty from Pástor and Veronesi (2012). For robustness, we also consider an alternative version of the index that is exclusively news-based, and taps into over 1,000 U.S. newspaper archives from Access World News' NewsBank service.

Consistent with our theoretical predictions, we find a strong and positive association between stock-level institutional herding and political uncertainty. To get a sense of the magnitude, we find that a one-standard-deviation increase in either specification of the economic policy uncertainty index is associated with an increase between one-fifth and one-third of a standard deviation in institutional herding within the same quarter. The estimates are robust accounting for a number of financial, political, and economic controls, such as the level and volatility of stock returns, presidential term-years and political affiliation, the rate of growth of consumption, industrial production, and employment, and the NBER recession indicator. Overall, our results seem to be driven by genuine political uncertainty, rather than uncertainty of a financial or economic nature.[4]

[3]Intent aside, fund managers may also exhibit correlation in their trades without imitation mediating the process ("spurious herding"); the latter may hold when they follow similar investment styles (Celiker, Chowdhury, and Sonaer, 2015; Frijns, Gilbert, and Zwinkels, 2016), or when their information sets are correlated ("investigative herding" – see Froot, Scharfstein, and Stein, 1992 and Hirshleifer, Subrahmanyam, and Titman, 1994).

[4]It is important to note that these types of uncertainty are all related to some extent (Pástor and Veronesi, 2013; Baker, Bloom, and Davis, 2016). In our sample, for instance, we find that both versions of the index of economic policy uncertainty are

Pástor and Veronesi (2013) show that government has an incentive to look for reform when the current policy does not yield the expected results, which increases uncertainty about its future actions. Specifically, new potential policies are likely to be riskier when popularity falls below a given threshold, because the contract between the executive and the constituency makes it optimal to engage in some form of gambling for resurrection (see Downs and Rocke (1994) for an excellent discussion). In light of these considerations, we expect the relation between political uncertainty and institutional herding to be particularly strong in times of low political sentiment.

To test this hypothesis, we acknowledge that the difference between approval and disapproval ratings represents a key measure of popularity of the U.S. president (Abramowitz, 2004, 2008). When net disapproval is high, the group of presidential opponents becomes relatively large vis-à-vis the supporters' group. In turn, this implies that the overall level of political sentiment in the country is low. Consistent with our conjecture, we find that the relation between institutional herding and political uncertainty is significantly stronger in times of large net disapproval.

To validate the results, we test two specific implications of our story. First, a high degree of economic policy uncertainty also makes government policies harder to assess, making evaluations more dispersed (see, e.g., Bloom, 2014). As a result, we should find a similar association between institutional herding and differences of opinion over government economic policy. Second, policies that are harder to evaluate should also make economic outcomes less predictable. In turn, this implies a relation between institutional herding and differences of opinion over future business conditions. Using data from the Thomson Reuters/University of Michigan Surveys of Consumers, we find evidence consistent with both predictions.

Around the mid-1990s, a large increase in the market share of equity funds created a structural shift in mutual-fund herding. Before then, mutual-fund herding was limited, and associated with an improvement in market efficiency (Wermers, 1999). Afterwards, institutional herding increased substantially, and became destabilizing for stock prices (Dasgupta, Prat, and Verardo, 2011; Brown, Wei, and Wermers, 2014). Consistent with this pattern, we find that the effect of economic policy uncertainty on institutional herding is concentrated in the latter period. We also find that politically-motivated herding is stronger after negative shocks to aggregate mutual-fund growth, which sheds new light on the idea that reputational and career concerns play an important role in institutional herding (see, e.g., Dasgupta, Prat, and Verardo, 2011; Brown, Wei, and Wermers, 2014).

In the last part of the paper, we study the effect of political uncertainty on institutional herding within a few specific stock categories. In the first group of tests, we consider company size. It is well-known that small stocks are riskier (in information and liquidity terms) than large stocks, and thus command a risk premium (see, e.g., Fama and French, 1992, 1993). The higher risk that characterizes these stocks, however, should also make them more sensitive to political uncertainty, and thus more likely to attract politically-motivated

positively correlated with stock market volatility (both realized and implied), and negatively correlated with macroeconomic indicators. However, politically-motivated herding is not explained away by any of these variables.

herding.[5] The empirical evidence supports this conjecture. We find that the relation between institutional herding and economic policy uncertainty is significantly stronger for small stocks, and especially so in times of low political sentiment.

Next, we study the effect of political connections on politically-motivated herding. In the spirit of Bonaparte, Kumar, and Page (2017), we classify companies as "connected" if they are located in states aligned with the political affiliation of the White House, and "unconnected" otherwise. The intuition is that a state governor who is from the same political party as the president may grant local companies (directly or indirectly) preferential access to the office of the presidency, with potential advantages ranging from information acquisition to favorable policy-making.[6]

Since less politically-connected firms have more uncertain prospects (see, e.g., Fisman, 2001; Faccio, Masulis, and McConnell, 2006), we hypothesize that connected companies have a political edge over unconnected companies, other things being equal. Specifically, the latter can be thought of as comparatively riskier. Consistent with this view, we find that the relation between institutional herding and economic policy uncertainty is significantly stronger for unconnected companies. When the president becomes unpopular, however, the relation flips sign, which suggests that companies are negatively affected by a political connection to an unpopular president. This result provides new evidence for the idea that politically-connected firms suffer disproportionately more from negative shocks to the incumbent government (see, e.g., Fisman, 2001).

Pástor and Veronesi (2018) propose a theoretical model of political cycles, and show that Republican presidential candidates are picked when electors prefer less insurance and more business risk. Consistent with this view, Blinder and Watson (2016) find an empirical association between Republican administrations and a number of particularly tough and controversial issues in the postwar era.[7] Drawing on these insights, we hypothesize that a given level of economic policy uncertainty is associated with greater risk under Republican administrations, and therefore with more institutional herding.

To test this hypothesis, we identify specific stock categories that are more sensitive to the political affiliation of the presidency. We consider small stocks (Santa-Clara and Valkanov, 2003), stocks with high firm-level political risk (Hassan, Hollander, van Lent, and Tahoun, 2019), and stocks deemed as "politically sensitive" (Hong and Kostovetsky, 2012). The empirical evidence lends support to our conjecture. We find that the relation between institutional herding and economic policy uncertainty is stronger for these stocks, and the effect is concentrated under Republican administrations.

The present work speaks to a burgeoning literature on politics and finance. A growing body of evidence shows that political evaluations affect risk taking (Bonaparte, Kumar, and Page, 2017; Meeuwis, Parker,

[5] While institutional investors generally exhibit a preference for large stocks, there is a substantial fraction of mutual funds that trades small stocks (Falkenstein, 1996).

[6] This is the reason we consider the political color of the state, rather than the county, because this mechanism is unlikely to be operational for lower-level political representatives.

[7] The list includes adverse oil shocks, lower total factor productivity performance, a generally less favorable international environment, lower consumer optimism, and an overall less predictable economy.

Schoar, and Simester, 2018), analysts' forecasts (Kempf and Tsoutsoura, 2018), asset allocation (Hong and Kostovetsky, 2012; Addoum and Kumar, 2016), and stock returns (Santa-Clara and Valkanov, 2003). In this paper, we find that political evaluations also generate institutional herd behavior. To the extent that herding can destabilize stock prices (Dasgupta, Prat, Verardo, 2011; Brown, Wei, and Wermers, 2014), the results suggest that the effect of political uncertainty on financial markets might be larger than previously thought.

The paper proceeds as follows. Section 2 describes the data and methodology. Section 3 illustrates the empirical results. Section 4 concludes.

2. Data and methodology

Institutional herding

The main dependent variable of our study is stock-level institutional herding. To identify it empirically, we use U.S. 13F institutional ownership quarterly data and follow the methodology from Sias (2004).[8] The sample period is from the first quarter of 1985 through the fourth quarter of 2019. We calculate each institutional investor's end-of-quarter position in each security as a fraction of the security's shares outstanding. For each security and quarter, we define buyers as institutional investors who increased their ownership in the stock quarter-on-quarter, and sellers otherwise.

Following Sias (2004), we apply a number of filters. We only include common stocks, and managers that hold at least one security at both the beginning and at the end of the quarter. Also, we limit the sample to securities that have the same CUSIP throughout the quarter, and at least one institutional investor trading the security during the quarter. We further divide stocks into securities held by at least 1, 5, 10, or 20 institutional traders.

For each quarter, we calculate the fraction of institutional investors that are net buyers of security k in quarter t:

$$Raw\Delta_{k,t} = \frac{\text{No. of institutions buying}_{k,t}}{\text{No. of institutions buying}_{k,t} + \text{No. of institutions selling}_{k,t}}. \tag{1}$$

To allow for aggregation over time and comparisons across specifications, we standardize this ratio. Specifically, we subtract the cross-sectional average fraction of net buyers in quarter t from the raw ratio for a given stock in the same quarter, and divide by the cross-sectional standard deviation (across securities) of the fraction of net buyers in quarter t:

$$\Delta_{k,t} = \frac{Raw\Delta_{k,t} - \overline{Raw\Delta_t}}{\sigma(Raw\Delta_{k,t})}. \tag{2}$$

To identify institutional herding, we estimate a regression of the standardized fraction of institutions buying security k in quarter t over the fraction from the previous quarter:

$$\Delta_{k,t} = \beta_t \Delta_{k,t-1} + \epsilon_{k,t}, \tag{3}$$

[8] Sias (2004) uses the Spectrum database, which reports holdings at the institutional level. By contrast, our data set reports holdings at the mutual fund level.

where $\Delta_{k,t}$ is the standardized fraction of institutions buying security k in the current quarter (t), and β_t measures institutional demand's cross-sectional correlation between the current quarter (t) and the previous one ($t-1$). We expect $\beta_t > 0$ for two reasons. First, institutional investors may follow their own trades over time, i.e., continue trading in the same direction. Second, and importantly for our purposes, such investors may follow each other into and out of the same securities (herding). To tease out the latter mechanism from the former, Sias (2004) decomposes the β_t coefficient into two parts:

$$\begin{aligned}
\beta_t &= \rho(\Delta_{k,t}\Delta_{k,t-1}) \\
&= \left[\frac{1}{(K-1)\sigma(Raw\Delta_k)\sigma(Raw\Delta_{k,t-1})}\right] \\
&\times \sum_{k=1}^{K}\left[\sum_{n=1}^{N_{k,t}} \frac{(D_{n,k,t} - \overline{Raw\Delta_t})(D_{n,k,t-1} - \overline{Raw\Delta_{t-1}})}{N_{k,t}N_{k,t-1}}\right] \\
&+ \left[\frac{1}{(K-1)\sigma(Raw\Delta_k)\sigma(Raw\Delta_{k,t-1})}\right] \\
&\times \sum_{k=1}^{K}\left[\sum_{n=1}^{N_{k,t}}\sum_{m=1,m\neq n}^{N_{k,t-1}} \frac{(D_{n,k,t} - \overline{Raw\Delta_t})(D_{m,k,t-1} - \overline{Raw\Delta_{t-1}})}{N_{k,t}N_{k,t-1}}\right],
\end{aligned} \tag{4}$$

where $N_{k,t}$ is the number of active funds trading security k on quarter t; $N_{k,t-1}$ is the number of active funds trading security k on quarter $t-1$; $D_{n,k,t}$ is a dummy variable that takes the value of one if fund n increases its position in security k on quarter t, and zero if fund n increases its position in security k; $D_{m,k,t-1}$ is a dummy variable that takes the value of one if fund m ($m \neq n$) increases its position in security k in quarter $t-1$, and zero when its position decreases. The first term on the right-hand side of the equation above represents the portion of institutional demand due to funds following the own trades, while the second term represents the portion of institutional demand due to funds following the trades of others. A positive value of the second term would indicate that funds trade towards the trades of other funds in quarter t (herding), while a negative value indicate that funds trade away from other funds.

In Table 1, Panel A, we provide time-series averages of the institutional herding estimates. We find that herding is positive and significant for all four thresholds of active funds per stock we consider. Specifically, stocks with at least 1, 5, 10, or 20 institutional traders respectively exhibit a herding coefficient of 0.11, 0.28, 0.35, and 0.40 (p-value < 0.01 for all four, computed from the time-series standard errors), thus revealing that the magnitude of herding increases with the number of institutional traders active in a stock. The magnitude increases with the number of institutional traders, as these are stocks that are more popular for example for common investment styles.

Political uncertainty

To empirically identify political uncertainty, we use the U.S. economic policy uncertainty index from Baker, Bloom, and Davis (2016). The main version of the index has three components. The first component is an index of search results from 10 large newspapers. The newspapers included are USA Today, the Miami Herald, the Chicago Tribune, the Washington Post, the Los Angeles Times, the Boston Globe, the San

Francisco Chronicle, the Dallas Morning News, the New York Times, and the Wall Street Journal. From these papers, the authors construct a normalized index of the volume of news articles discussing economic policy uncertainty.

The second component draws on reports by the Congressional Budget Office (CBO) that compile lists of temporary federal tax-code provisions. The authors create annual dollar-weighted numbers of tax-code provisions scheduled to expire over the next 10 years, giving a measure of the level of uncertainty regarding the path that the federal tax code will take in the future.

The third and last component draws on the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters. Specifically, the authors utilize the dispersion between individual forecasters' predictions about future levels of the Consumer Price Index, Federal Expenditures, and State and Local Expenditures to construct indices of uncertainty about policy-related macroeconomic variables.

We also consider a second version of the index, which is exclusively news-based. This index draws on newspaper archives from the Access World News' NewsBank service. The database contains the archives of thousands of newspapers and other news sources from all over the world. While NewsBank has a wide range of news sources, from newspapers to magazines to newswire services, Baker, Bloom, and Davis (2016) conduct the analysis only utilizing newspaper sources. Specifically, they restrict the analysis to newspapers in the United States, of which NewsBank covers more than 1000. These newspapers range from large national papers to small local newspapers across the country.

The primary measure for this index is the number of articles that contain at least one term from each of 3 sets of terms. The first set is "economic" or "economy". The second is "uncertain" or "uncertainty". The third set includes "legislation", "deficit", "regulation", "Congress", "Federal Reserve", and "White House". The number of newspapers that NewsBank covers over time has increased substantially, from 18 in 1985 to over 1800 by 2008. To correct for this growth, the authors normalize the index by relating the number of economic policy uncertainty articles to the total number of newspaper articles.

The summary statistics in Table 1, Panel B, show that the economic policy uncertainty index has a relatively symmetric distribution, with a sample mean of 109.9 and a median of 104.4. The standard deviation is 32.9, and the interquartile range is between 84.3 and 126.4. For the news-based version of the index, the sample mean and the median are 114.4 and 105.1, respectively. The standard deviation is 42.8, and the interquartile range is between 84.4 and 134.2.

Political sentiment

We also construct a measure of nationwide political sentiment. To this end, we consider the U.S. president's monthly approval rating polls from Gallup, and aggregate them at the quarterly frequency. The data is collected nationwide from Gallup via telephone interviews. The number of respondents per poll is approximately 1,500 adults, and the typical question asked is "Do you approve or disapprove of the way the president is handling his job?". The answer can be positive, negative, or neutral. The overall proportion of positive (negative) answers is commonly referred to as presidential approval (disapproval) ratings. To the

extent that political beliefs affect expectations, the president's supporters and opponents can be thought of as optimists and pessimists, respectively.

Following previous research, we define political sentiment as the difference between approval and disapproval ratings (Abramowitz, 2004, 2008). When net disapproval is positive, presidential opponents outnumber the president's supporters, which implies that the overall level of political sentiment in the country is low. In our sample, we find that 45 quarters fall into positive net disapproval periods, and 90 under negative net disapproval, where the latter represent the instance in which approval ratings are above disapproval ratings. In the analysis that follows, we use net disapproval both for a sample breakdown and as a moderating variable in the relation between institutional herding and political uncertainty.

Controls

The analysis also includes a number of financial, economic, and political controls. The financial variables are excess returns on the market portfolio over the quarter, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. The market portfolio is defined as the set of all stocks traded on the NYSE, AMEX, and NASDAQ, and is retrieved from Kenneth French's website. The average quarterly excess return on the stock market portfolio is 1.26%, with a median of 2.84%, and a standard deviation of 11.98%.

The economic variables are the six macroeconomic indicators from Baker and Wurgler (2006). The list includes the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that assumes the value of unity for NBER recessions. All variables are retrieved from the Bureau of Economic Analysis. The average growth rate is equal to 0.49% for the industrial production index, 1.04% for consumption of durable goods, 1.01% for consumption of nondurable goods, 1.01% for consumption of services, and 0.33% for employment. Of all the quarters in the sample, about 8% fall under recession periods.

Finally, the political indicators include a set of dummy variables for each of the presidential term-years, and a dummy variable that takes on the value of one for Democratic presidents. The political affiliation of the presidency is almost equally split between Democrats and Republicans over the sample period, where the former occupied the White House 47% of the time.

3. Empirical analysis

We present the empirical findings as follows. First, we estimate the relation between institutional herding and economic policy uncertainty in our baseline regressions. Second, we explore a number of additional implications of our story, along with some alternative explanations. Finally, we analyze politically-motivated herding within specific stock categories of interest.

3.1. Baseline regressions

To estimate the relation between institutional herding and economic policy uncertainty, we estimate the following regression:

$$y_t = \beta_0 + \beta_1 EPU_t + \gamma' X_t + \epsilon_t, \tag{5}$$

where y_t is stock-level institutional herding, EPU_t is economic policy uncertainty, and X_t is a vector that includes the economic, financial, and political controls introduced above. Given the persistent nature of both the dependent and the main independent variables, we use Newey-West standard errors.[9] Following our theoretical arguments, we expect $\beta_1 > 0$.

In Table 2, we consider the primary specification of the economic policy uncertainty index. The estimates are in Panel A. Consistent with our expectations, the coefficient of economic policy uncertainty is positive and significant across all specifications. For the herding measures over stocks with at least 1, 5, 10, or 20 institutional traders, respectively, the coefficient of interest is equal to 0.04 (t-stat 2.29), 0.12 (t-stat 2.65), 0.15 (t-stat 2.48), and 0.13 (t-stat 2.02). Next, we test our conjecture that the effect of economic policy uncertainty on institutional herd behavior should be more pronounced in times of low political sentiment. To this end, we define periods of low (high) political sentiment as those in which net disapproval is positive (negative). Then, we re-estimate the test equation separately in each of these subsamples.

The results are outlined in Table 2, Panels B and C. We find that the effect of economic policy uncertainty on institutional herding is confined in times of low political sentiment. The estimates are highly significant, and substantially increase in magnitude. For the herding measures over stocks with at least 1, 5, 10, or 20 institutional traders, respectively, the coefficient of interest is equal to 0.10 (t-stat 1.92), 0.30 (t-stat 2.66), 0.37 (t-stat 2.70), and 0.38 (t-stat 2.78). On the other hand, none of the coefficients are significant in the subsample of high political sentiment.

To test whether the coefficients are significantly different across periods of high and low political sentiment, we estimate an additional specification in which we add an interaction term between economic policy uncertainty and net disapproval, and also net disapproval as a standalone variable as a control. The results are in Table 2, Panel D. The coefficient of the interaction term is positive and significant, which indicates that the effect of economic policy uncertainty on institutional herding is significantly larger in times of low sentiment.

To get a sense of the magnitude, consider a one-standard-deviation increase in economic policy uncertainty. For each of the four herding measures, this prompts an increase in institutional herding of respectively 20%, 29%, 29%, and 24% of a standard deviation in the full sample. In the low-sentiment subsample, the effect increases to 50%, 73%, 76%, and 71% of a standard deviation. In Table 3, we repeat the analysis for the news-based specification of the economic policy uncertainty index. We find a similar empirical pattern.

[9] The autocorrelation coefficients are 0.39, 0.69, 0.70, and 0.68 for the herding measures over stocks with at least 1, 5, 10, or 20 institutional traders, respectively (p-value < 0.01). For the two measures of economic policy uncertainty, the autocorrelation coefficients are respectively equal to 0.63 and 0.41 (p-value < 0.01). None of these variables contain a unit root.

In Panel A, we find that the coefficient of economic policy uncertainty is positive and significant. In Panels B and C, we find that the results are stronger in times of low political sentiment. In Panel D, we find that this difference is statistically significant.[10]

The economic magnitude of the effect is similar to that from the previous specification. A one-standard-deviation increase in economic policy uncertainty prompts an increase in institutional herding of respectively 20%, 35%, 40%, and 36% of a standard deviation for each of the four herding measures in the full sample. In the low-sentiment subsample, the effect increases to respectively 46%, 69%, 72%, and 68% of a standard deviation.

Overall, we find that U.S. institutional investors herd more when political uncertainty rises, and this pattern amplifies during periods of adverse political sentiment toward the president in office. These results suggest that political uncertainty can motivate herding among fund managers, in line with our theoretical predictions.

3.2. Additional tests

Differences of opinion

To provide validation to our interpretation of the results, we test two specific implications of our story. First, we acknowledge that a high degree of economic policy uncertainty makes policies harder to assess and/or predict, which in turn should translate into greater differences of opinion (see, e.g., Bloom, 2014). As a result, we expect to find a similar positive association between our herding measures and dispersion of economic policy evaluations. Second, high economic policy uncertainty also makes economic outcomes less predictable. In turn, this implies a positive relation between institutional herding and differences of opinion over future business conditions.

In the spirit of Li and Li (2014), we respectively identify these two variables as the evaluation of government economic policy (GOVT) and the 12-month business conditions forecast (BEXP) from the Thomson Reuters/University of Michigan Surveys of Consumers. We also acknowledge that the data only includes qualitative responses, therefore we transform the series following Li and Li (2014). We delete "N/A" and "I don't know" responses, and impose a $(-1, 1)$ domain for the answers (positive = 1, neutral = 0, negative = -1).[11] To calculate the standard deviation of beliefs, we construct a negative Herfindahl index, so that higher values indicate greater dispersion of opinion.

The results for GOVT are in Table 4. In Panel A, we consider the full sample. Consistent with the expectations, the coefficient of interest is positive and significant in most specifications. For each of the herding

[10] In untabulated tests, we find similar results when expressing either version of the economic policy uncertainty index in logs rather than levels.

[11] For BEXP, the survey question is "(...) About a year from now, do you expect that in the country as a whole business conditions will be better, or worse than they are at present, or just about the same?", and the answers are "Better", "About the same", "Worse", "I don't know", and "N/A". For GOVT, the survey question is "As to the economic policy of the government – I mean steps taken to fight inflation or unemployment – would you say the government is doing a good job, only fair, or a poor job?", and the answers are "Good", "Only fair", "Poor", "I don't know", and "N/A".

measures under consideration, we find that a one-standard-deviation increase in dispersion of opinion over government policy is associated with an increase in institutional herding of respectively 30%, 40%, 31%, and 25% (although not significant) of a standard deviation.

In Panels B and C, we split the sample into periods of low and high political sentiment, respectively. In low-sentiment periods, the estimates become substantially larger in both magnitude and significance, and respectively equal to 56%, 84%, 77%, and 72% of a standard deviation in institutional herding. Conversely, the estimates are close to zero in both magnitude and significance in the high-sentiment subsample. In Panel D, we find that the difference in magnitude across subsamples is also statistically significant.

In Table 5, we present the results for BEXP. We find similar estimates. In the full sample (Panel A), a one-standard-deviation increase in dispersion of opinion over future economic conditions is associated with an increase in institutional herding of respectively 21%, 38%, 38%, and 36% of a standard deviation. The estimates become larger and highly significant in the low-sentiment subsample (Panel B), and equal respectively to 97%, 110%, 129%, and 131% of a standard deviation in institutional herding, whereas they are not significant in the high-sentiment subsample (Panel C). Again, we find that the estimates are statistically different across these two subsamples (Panel D).

The above findings denote that herding among U.S. fund managers rises in divergence of opinion on contemporaneous and future economic outcomes. As such divergence is expected to grow more pronounced during politically uncertain periods, the empirical patterns emerging from these additional tests are in line with those from our baseline regressions, thus confirming that political uncertainty enhances institutional herding, more strongly so in the presence of negative political sentiment.

Sample breakdown

Previous research finds a structural shift in mutual-fund herding around the mid-1990s, due to a large increase in the market share of equity funds in the United States. In the period 1975-1994, U.S. mutual-fund herding was relatively limited, and mostly associated with an improvement in market efficiency (Wermers, 1999). In the subsequent period, however, mutual-fund herding increased and became destabilizing for stock prices, leading to substantial return reversals (Dasgupta, Prat, and Verardo, 2011; Brown, Wei, and Wermers, 2014).

In light of these findings, we analyze whether politically-motivated herding also exhibits a similar pattern. If mutual-fund herding was indeed less aggressive before the mid-1990s, we expect the relation between institutional herding and economic policy uncertainty to be weaker in that subperiod. To test this conjecture, we follow Dasgupta, Prat, and Verardo (2011) and introduce a pre-1994 period dummy, defined as a variable that takes on the value of one for the period from 1985q1 to 1993q4, and zero otherwise, and interact it with our variables of interest.

Results are reported in Table 6. Consistent with our expectation, we find that the coefficients of the interaction terms between our variables of interest and the pre-1994 period dummy are negative and significant, with the only exception observed for stocks held by at least 20 institutional investors (where the coefficients

are outside the rejection region). The effect of economic policy uncertainty on institutional herding then appears to be mostly limited to the post-1994 subsample, which lends support to the idea that institutional herding became substantially stronger in that period.

Career concerns

Institutional herd behavior seems to be related, at least in part, to reputational and career concerns of portfolio managers (see, e.g., Dasgupta, Prat, Verardo, 2011; Brown, Wei, and Wermers, 2014). In our analysis, we test whether this motive also underlies politically-motivated herding. If so, we expect institutional herding to be particularly pronounced in times when the mutual-fund industry is more likely to come under scrutiny, due for example to collectively poor performance or slower growth. This is when a fund manager's reputation is more likely to be questioned, and job security challenged.

To test this hypothesis, we proceed as follows. In the spirit of Colacito, Croce, Ho, and Howard (2018), we identify shocks to the growth rate of aggregate mutual-fund equity holdings, calculated through an AR(1) model, as a state variable that indicates unexpected mutual-fund growth in the equity market. Then we construct a dummy variable that takes on the value of one when such shocks are positive at the end of the previous quarter, and zero otherwise, and interact it with our variables of interest. We expect career concerns, and therefore politically-motivated herding, to be less pronounced after positive shocks.

The results are in Table 7. Consistent with our conjecture, we find that the coefficient of the interaction term between the positive-shock dummy and the economic policy uncertainty index is negative and significant, the only exception being that of herding for stocks held by at least one institutional investor (where the coefficient is slightly outside of the rejection region). These findings indicate that politically-motivated herding is substantially dampened following positive shocks to aggregate mutual-fund growth. The effect is more pronounced in times of low net disapproval, even though with weaker statistical significance.

Our findings, therefore, denote that political uncertainty tends to boost herding among U.S. fund managers during periods of negative growth in their equity investments, thus suggesting that political uncertainty amplifies the impact of adverse industry prospects among fund managers in their decision to herd. Overall, this empirical pattern lends novel support to the idea that reputational and career concerns play an important role in institutional herding.

Alternative explanations

DeVault, Sias, and Starks (2019) show that Baker and Wurgler's (2006, 2007) investor sentiment index explains shocks in institutional investor demand. Then a potential concern is that the effect of economic policy uncertainty on institutional herding may partly overlap with the effect of investor sentiment. To rule out this possibility, we augment our baseline regression with Baker and Wurgler's (2007) monthly investor sentiment index, which we transform into a quarterly series.[12]

[12]This measure captures changes in asset demand not explained by economic fundamentals, and is based on a number of proxies suggested in previous literature, including the closed-end fund discount, the NYSE share turnover, the number and

The results are in Table 8, Panel A. Reassuringly, we find that the coefficient of economic policy uncertainty remains positive and significant for all four herding specifications. Interestingly, the coefficient of investor sentiment is negative all throughout (even though only significant for the first two specifications). Given the pervasive impact of investor sentiment on asset prices (see, e.g., Baker and Wurgler, 2006), this result is in line with the idea that institutional investors herd more when they expect stock prices to decline (Brown, Wei, and Wermers, 2014).

Another potential concern is that economic policy uncertainty may capture some form of financial uncertainty, such as implied volatility, which is also associated with herding in its own right (see, e.g., Economou, Hassapis, and Philippas, 2018). To address this point, we augment the baseline regressions with the Chicago Board of Options and Exchange volatility index (VIX). The results are in Table 8, Panel B. Again, we find that the estimates are largely unaffected by the inclusion of this additional variable. It seems then that it is genuine political uncertainty that drives the results.

3.3. Stock categories

Size breakdown

We begin our analysis of specific stock categories by performing a sample breakdown based on market capitalization. Stocks of small size are riskier than large stocks, and command a risk premium (see, e.g., Fama and French, 1992, 1993). The higher risk that characterizes these stocks, however, should also make them more sensitive to political uncertainty. As a result, we expect them to attract more politically-motivated herding (compared with large stocks), more so in times of low political sentiment.

To test this prediction, we split the sample according to company size. We define large and small stocks, respectively, as those with above- and below-median market capitalization, and held by at least 5 institutional investors.[13] We re-estimate our baseline regressions for each of these subsamples, and then directly compare the institutional herding measures across small and large stocks.

The results are in Table 9, Panel A, columns (1) to (3). We find a positive and significant association between economic policy uncertainty and institutional herding for both small and large stocks. The effect, however, is more pronounced among the former. A one-standard-deviation increase in economic policy uncertainty is associated with an increase in institutional herding equal to 38% of a standard deviation for small stocks, and 22% of a standard deviation for large stocks. The difference is also statistically significant.

In columns (4) to (6), we introduce net disapproval ratings. Consistent with our expectation, we find that politically-motivated herding is more pronounced for small stocks in times of low political sentiment, whereas the effect does not vary with sentiment among large stocks. The difference between these two coefficients is also statistically significant. Overall, these results lend support to our prediction that small stocks are more sensitive to political uncertainty, especially so in times of low political sentiment.

average first-day returns on IPOs, the equity share in new issues, and the dividend premium.

[13]This choice reflects the trade-off between minimizing the effect of common styles across funds, and avoiding stocks whose coverage is too sparse.

Political connections

In the second group of tests, we study the effect of political connections. To identify politically-connected companies in the universe of U.S. stocks, we proceed as follows. Building on the methodology from Bonaparte, Kumar, and Page (2017), we match the zip code of company headquarters with state-level voting data in presidential elections. Then we define companies as politically connected if they are located in states that exhibit the same political affiliation as the White House. This choice incorporates the idea that politically-affiliated governors may provide firms access to the office of the presidency.

Companies that lack this connection, on the other hand, are at a political disadvantage compared with politically-connected firms. Since companies with less political connections have more uncertain prospects (see, e.g., Fisman, 2001; Faccio, Masulis, and McConnell, 2006), we hypothesize that unconnected companies face greater political uncertainty, and should then be the target of greater politically-motivated herding.

We test this hypothesis in Table 10, columns (1) to (3). We find that the coefficient of economic policy uncertainty is positive and significant among both connected and unconnected companies (columns 1 and 2).[14] However, a one-standard-deviation increase in economic policy uncertainty is associated with an increase in institutional herding of 44% of a standard deviation for connected firms, and 31% of a standard deviation for unconnected ones, and the difference is not only economically but also statistically significant (column 3). Consistent with our conjecture, then, the relation between institutional herding and economic policy uncertainty is significantly stronger for companies located in states that are not politically aligned with the White House.

Next, we study how this relation varies with political sentiment. The results are in columns (4) to (6). We find that the results from the unconditional tests only hold in times of high political sentiment. When political sentiment is low, instead, politically-motivated herding actually becomes stronger for connected companies. The results suggest that there is a dark side to political connections, as being linked to an unpopular administration can make the company's prospects more uncertain. This mechanism provides a new kind of confirmation to the idea that politically-connected firms suffer disproportionately more from negative shocks to the politicians they support (see, e.g., Fisman, 2001).

Presidential affiliation

Recent research shows that Republican administrations have been historically associated with a number of tough and controversial issues in the postwar era, such as adverse oil shocks, lower total factor productivity performance, a generally less favorable international environment, lower consumer optimism, and an overall less predictable economy. Pástor and Veronesi (2018) argue that this association might not be random, because it is theoretically optimal for electors to choose Republican presidential candidates when they prefer less insurance from government and more business risk.

Drawing on these insights, we expect economic policy uncertainty to have a stronger effect on institu-

[14] Unfortunately, there is one missing observation for the herding measure of unconnected companies.

tional herding under Republican administrations. The intuition is that higher risk makes it comparatively harder to assess the impact of current policies, and/or make predictions on future alternative policies. If risk is positively associated with Republican presidencies, then we expect the latter to represent a moderating variable in the relation between economic policy uncertainty and institutional herding.

To test this hypothesis, we augment our baseline regressions with an interaction term between economic policy uncertainty and the Democratic dummy, and identify a number of specific stock categories that are more sensitive to the political affiliation of the presidency. Santa-Clara and Valkanov (2003) show that U.S. stock returns earn a substantial premium under Democratic presidencies, and that the effect is particularly pronounced among small stocks. The intuition is that small stocks are particularly sensitive to systematic risk (Cooley and Quadrini, 1997; Perez-Quiros and Timmermann, 2000), and therefore also to nationwide economic policies. In light of this, we expect politically-motivated herding to be more pronounced among small stocks under Republican presidencies.

The results are in Table 11, column (1). We find again that the coefficient of economic policy uncertainty as a standalone variable is positive and significant. Specifically, the effect of a one-standard-deviation increase in economic policy uncertainty on institutional herding is 31% (of a standard deviation) stronger for small stocks when compared with large stocks. Interestingly, however, the effect is entirely concentrated under Republican presidencies. Under Democratic administrations, politically-motivated herding does not differ across small and large stocks.

Hong and Kostovetsky (2012) identify a number of stock categories that are particularly divisive across party lines, and define them as politically sensitive.[15] They argue that Republicans tend to be more lenient on issues such as environmental damage, smoking, and guns. For these industries, then, shifts in the political affiliation of the presidency have an important bearing on future economic prospects.

The mechanism we propose is as follows. As Republicans introduce more favorable legislation on politically-sensitive industries, they also make these stocks riskier because most of the provisions will likely be modified or reversed under future Democratic administrations. In light of this, we expect politically-motivated herding to be more pronounced on politically-sensitive stocks relative to non-sensitive stocks under Republican presidencies.

The results are in Table 11, column (2). We find evidence in support of our conjecture. While the coefficient of economic policy uncertainty as a standalone variable is positive and (marginally) significant, the coefficient of its interaction term with the Democratic dummy is negative and significant. Politically sensitive stocks attract indeed greater politically-motivated herding, but only under Republican presidencies.

In the last group of tests, we estimate two measures of firm-level political risk. First, we calculate the EPU beta of each stock in the sample, estimated through a three-year rolling window controlling for excess

[15]Such stocks are from the following industries (SIC codes in parentheses): tobacco (2100-2199); guns and defense (3760-3769, 3795, 3480-3489); natural resources, including forestry (0800-0899) and mining (1000-1119, 1400-1499); and alcohol (2080, 2082-2085).

returns on the U.S. stock market portfolio, defined as the set of all stocks traded on the NYSE, AMEX, and NASDAQ. Then, we identify stocks with high firm-level political risk as those that exhibit an above-median EPU beta. Second, we consider the measure of firm-level political risk from Hassan, Hollander, van Lent, and Tahoun (2019), and divide again stocks with above- and below-median risk.[16]

Given their higher sensitivity to the political environment, we expect these stocks labeled as politically risky to have particularly uncertain prospects under Republican presidencies. To test this hypothesis, we directly compare politically-motivated herding on stocks with an above- and below-median level of political risk, following either of the definitions introduced above, and study how this relation varies with presidential affiliation.

The results are in Table 11, columns (3) and (4). The results are analogous for both specifications. We find that politically-risky (i.e., above-median) stocks do indeed attract greater politically-motivated herding than less risky (i.e., below-median) ones, but only under Republican presidencies. Under Democratic administrations, the effect disappears.

In additional tests, we find that none of these results are driven by correlation between institutional herding and the president's political affiliation, or between political affiliation and economic policy uncertainty. Rather, there seems to be a genuine structural break in politically-motivated herding. Overall, the empirical evidence lends support to the idea that Republican presidencies are associated with greater risk.

4. Conclusion

In this paper, we show that economic policy uncertainty generates substantial herd behavior among institutional investors. Our analysis builds on two well-known mechanisms. First, noisier signals constitute an incentive for institutional investors to mimic each other's trades. Second, institutional investors face reputational and litigation costs when their behavior deviates from the "herd", and especially so in the presence of negative stock information. In light of the fact that political uncertainty makes investor beliefs noisier and depresses stock prices, we expect both channels to be operational. Our empirical findings lend support to this conjecture.

We find that the results are particularly strong in times of low presidential popularity, which is in line with the idea that unpopular administrations steer towards riskier policies to try and win back the electorate. The estimates are also stronger for riskier stocks, defined as those characterized by small market capitalization and weak political connections, and for stocks that are commonly thought of as politically sensitive. While a growing body of literature unveils a link between political evaluations and a number of financial outcomes, this is the first paper to show that such evaluations also generate institutional herd behavior.

The results suggest that the economic and financial costs of political uncertainty might be larger than previously thought. To the extent that herding can destabilize stock prices, the increase in institutional

[16] Unfortunately, this measure is only available from 2002q2.

herding that takes place in times of high economic policy uncertainty should create additional noise in the stock market and alter the cost of equity in its own right. In future research, it would be interesting to quantify these effects both theoretically and empirically, both in the U.S. and internationally.

Overall, our findings are of particular interest to the investment community, as they can constitute useful input for investors with a U.S. market outlook. To the extent that U.S. quarterly institutional investors' holdings constitute public information that is periodically disclosed, an investor could extrapolate from them to predict future institutional demand conditional on variations of political uncertainty (and sentiment) across periods/stocks in the context of an *ad hoc* strategy. As far as regulators and policy makers are concerned, the evidence presented suggests the need for potential inclusion of the political sensitivities of stocks/industries in the curriculum of financial education initiatives, in order to enhance investors' awareness of this issue.

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Table 1. Summary statistics

Summary statistics for the main variables used in our analysis. The variables are: herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004); the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), along with a news-based version of the index; net disapproval ratings, defined as the difference between Gallup's disapproval and approval ratings over the U.S. president's job; a dummy variable that takes on value one of the U.S. president is a Democrat, and zero otherwise; excess stock returns on the market portfolio over the quarter (RmRf), retrieved from Kenneth French's website, along with average excess returns over the previous year (RmRf, 1y-mean), and the standard deviation of excess returns over the previous year (RmRf, 1y-SD); growth in the industrial production (IPI) index, growth in personal consumption expenditures on durables (PCED), nondurables (PCEND), and services (PCES), growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The sample period is from the first quarter of 1985 through the fourth quarter of 2019.

Panel A. Herding

Variable	Mean	SD	P25	Median	P75
H1	0.1109	0.0657	0.0789	0.1049	0.1536
H5	0.2773	0.1360	0.2150	0.2521	0.3253
H10	0.3471	0.1609	0.2864	0.3202	0.4054
H20	0.4034	0.1769	0.3392	0.3975	0.4752

Panel B. Politics

Variable	Mean	SD	P25	Median	P75
EPU (primary)	109.9	32.9	84.3	104.4	126.4
EPU (news-based)	114.4	42.8	84.4	105.1	134.2
Net disapproval	-0.1113	0.2436	-0.2750	-0.0850	0.0500
Democrat	0.4706	0.5010	0.0000	0.0000	1.0000

Panel C. Stock market

Variable	Mean	SD	P25	Median	P75
RmRf	0.0126	0.1198	-0.0498	0.0284	0.0875
RmRf (1y-mean)	0.0181	0.0407	0.0005	0.0261	0.0449
RmRf (1y-SD)	0.0402	0.0180	0.0264	0.0383	0.0509

Panel D. Economic growth

Variable	Mean	SD	P25	Median	P75
IPI growth	0.0049	0.0132	0.0010	0.0069	0.0111
PCED growth	0.0104	0.0318	-0.0039	0.0124	0.0252
PCEND growth	0.0101	0.0149	0.0029	0.0113	0.0180
PCES growth	0.0139	0.0057	0.0105	0.0139	0.0173
Employment growth	0.0033	0.0043	0.0021	0.0041	0.0062
NBER	0.0809	0.2737	0.0000	0.0000	0.0000

Table 2. Herding and economic policy uncertainty

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. Panel A includes the full sample. Panels B and C only include the subperiod in which the Gallup's presidential net disapproval ratings (ND) are positive and negative, respectively. Panel D includes the full sample and adds an interaction term between the index of economic policy uncertainty and net disapproval ratings, as well as standalone net disapproval ratings as a control. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Panel A. Full sample

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0004**	0.0012***	0.0015**	0.0013**
	2.29	2.65	2.48	2.02
Adj. R-squared	0.006	0.107	0.108	0.098
Observations	135	135	135	135

Panel B. ND > 0

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0010*	0.0030***	0.0037***	0.0038***
	1.92	2.66	2.70	2.78
Adj. R-squared	-0.015	0.111	0.106	0.063
Observations	45	45	45	45

Panel C. ND < 0

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0001	0.0004	0.0003	0.0001
	0.98	0.91	0.82	0.14
Adj. R-squared	0.071	0.245	0.206	0.200
Observations	90	90	90	90

Panel D. Full sample

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0006***	0.0014***	0.0017***	0.0017**
	3.07	3.09	2.92	2.42
EPU x ND	0.0016***	0.0024**	0.0032**	0.0040**
	2.74	2.03	2.14	2.30
Adj. R-squared	0.050	0.113	0.121	0.119
Observations	135	135	135	135

Table 3. Herding and news-based economic policy uncertainty

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the news-based U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. Panel A includes the full sample. Panels B and C only include the subperiod in which the Gallup's presidential net disapproval ratings (ND) are positive and negative, respectively. Panel D includes the full sample and adds an interaction term between the index of economic policy uncertainty and net disapproval ratings, as well as standalone net disapproval ratings as a control. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Panel A. Full sample

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0003	0.0011***	0.0015***	0.0015***
	1.34	2.80	3.09	2.87
Adj. R-squared	-0.008	0.144	0.161	0.152
Observations	135	135	135	135

Panel B. ND > 0

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0007**	0.0022***	0.0027***	0.0028***
	2.26	4.15	4.27	4.27
Adj. R-squared	-0.005	0.137	0.140	0.096
Observations	45	45	45	45

Panel C. ND < 0

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	-0.0001	0.0004*	0.0006**	0.0005**
	-0.37	1.88	2.38	2.22
Adj. R-squared	0.065	0.260	0.238	0.223
Observations	90	90	90	90

Panel D. Full sample

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0004***	0.0014***	0.0017***	0.0018***
	3.22	3.60	3.69	3.40
EPU x ND	0.0014***	0.0020***	0.0023***	0.0027***
	4.11	2.91	2.72	2.73
Adj. R-squared	0.076	0.168	0.183	0.178
Observations	135	135	135	135

Table 4. Herding and dispersion of opinion over government economic policy

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), dispersion of opinion over government economic policy (GOVT), and a vector of financial, economic, and political controls. Dispersion of opinion over government economic policy is calculated following Li and Li (2014), using data from the Thomson Reuters/University of Michigan Surveys of Consumers. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. Panel A includes the full sample. Panels B and C only include the subperiod in which the Gallup's presidential net disapproval ratings (ND) are positive and negative, respectively. Panel D includes the full sample and adds an interaction term between dispersion of opinion over government economic policy and net disapproval ratings, as well as standalone net disapproval ratings as a control. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Panel A. Full sample

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
GOVT	0.6902**	1.9426**	1.7852*	1.587
	2.09	2.19	1.67	1.42
Adj. R-squared	0.045	0.182	0.123	0.104
Observations	135	135	135	135

Panel B. ND > 0

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
GOVT	1.3163***	4.0856***	4.4212***	4.5130***
	3.59	4.77	4.37	4.15
Adj. R-squared	0.028	0.206	0.148	0.099
Observations	45	45	45	45

Panel C. ND < 0

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
GOVT	0.4165	0.7706	0.4525	0.2433
	1.46	1.23	0.69	0.37
Adj. R-squared	0.092	0.262	0.207	0.202
Observations	90	90	90	90

Panel D. Full sample

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
GOVT	0.6624***	1.9401***	1.8302**	1.6333*
	2.65	2.71	2.02	1.66
GOVT x ND	2.6942**	5.8874***	5.6594*	5.8125*
	2.40	2.65	1.94	1.71
Adj. R-squared	0.097	0.225	0.154	0.129
Observations	135	135	135	135

Table 5. Herding and dispersion of opinion over 12-month business conditions

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), dispersion of opinion over the 12-month business conditions forecast (BEXP), and a vector of financial, economic, and political controls. Dispersion of opinion over business conditions is calculated following Li and Li (2014), using data from the Thomson Reuters/University of Michigan Surveys of Consumers. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. Panel A includes the full sample. Panels B and C only include the subperiod in which the Gallup's presidential net disapproval ratings (ND) are positive and negative, respectively. Panel D includes the full sample and adds an interaction term between dispersion of opinion over business conditions and net disapproval ratings, as well as standalone net disapproval ratings as a control. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Panel A. Full sample

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
BEXP	0.4091	1.5149**	1.7709*	1.8323*
	1.33	2.14	1.93	1.86
Adj. R-squared	0.005	0.154	0.147	0.145
Observations	135	135	135	135

Panel B. ND > 0

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
BEXP	1.8519***	4.3540***	6.0079***	6.6928***
	5.10	4.93	6.19	6.59
Adj. R-squared	0.174	0.258	0.329	0.320
Observations	45	45	45	45

Panel C. ND < 0

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
BEXP	0.043	0.5747	0.4793	0.379
	0.18	1.52	1.30	1.02
Adj. R-squared	0.064	0.263	0.215	0.208
Observations	90	90	90	90

Panel D. Full sample

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
BEXP	0.7833***	2.2798***	2.8976***	3.1291***
	3.06	3.29	4.06	3.64
BEXP x ND	2.8360***	4.9041***	6.5640***	7.6446***
	4.20	2.85	3.29	3.40
Adj. R-squared	0.119	0.222	0.254	0.263
Observations	135	135	135	135

Table 6. Herding and economic policy uncertainty: Sample breakdown

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), Gallup's net presidential disapproval ratings (ND), defined as the difference between the U.S. president's disapproval and approval ratings, a dummy variable that takes on value one for the pre-1994 period, an interaction term between herding and net disapproval, an interaction term between herding and the pre-1994 dummy, an interaction term between herding, net disapproval, and the pre-1994 dummy, an interaction term between net disapproval and the pre-1994 dummy, and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0006**	0.0018***	0.0022***	0.0021**
	2.20	2.79	2.84	2.36
EPU x Pre-1994	-0.0013**	-0.0021**	-0.0022**	-0.0013
	-2.49	-2.46	-2.12	-1.20
EPU x ND	0.0016**	0.0023*	0.0033**	0.0042**
	2.34	1.72	2.11	2.25
EPU x ND x Pre-1994	-0.0044***	-0.0043*	-0.0052**	-0.0038
	-2.84	-1.89	-2.25	-1.40
Adj. R-squared	0.089	0.121	0.132	0.116
Observations	135	135	135	135

Table 7. Herding and economic policy uncertainty: Industry-level shocks

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), Gallup's net presidential disapproval ratings (ND), defined as the difference between the U.S. president's disapproval and approval ratings, a dummy variable that takes on value one for positive shocks to the growth rate of aggregate mutual-fund equity holdings, calculated through an AR(1) model and lagged one quarter, an interaction term between herding and net disapproval, an interaction term between herding and the positive shock dummy, an interaction term between herding, net disapproval, and the positive shock dummy, an interaction term between net disapproval and the positive shock dummy, and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

	(1) H1	(2) H5	(3) H10	(4) H20
EPU	0.0008**	0.0022***	0.0029***	0.0029***
	2.50	3.37	3.24	2.89
EPU x Shock$^+$ (-1)	-0.0005	-0.0014**	-0.0021***	-0.0021**
	-1.47	-2.36	-2.64	-2.47
EPU x ND	0.0005	0.0049*	0.0075**	0.0089**
	0.44	1.91	2.19	2.22
EPU x ND x Shock$^+$ (-1)	0.0013	-0.0031	-0.0054*	-0.0059*
	0.86	-1.22	-1.68	-1.66
Adj. R-squared	0.098	0.136	0.149	0.141
Observations	135	135	135	135

Table 8. Herding and economic policy uncertainty: Additional tests

Time-series regressions of herding measures (H) over stocks held by at least 1, 5, 10, or 20 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. The regressions also include Baker and Wurgler's (2007) investor sentiment (IS) index, orthogonalized to business cycle indicators, in Panel A, and the Chicago Board of Options and Exchange volatility index (VIX) in Panel B. The sample period starts in first quarter of 1985 in Panel A, and in the first quarter of 1990 in Panel B, and ends in the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Panel A

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
EPU	0.0004**	0.0011***	0.0013**	0.0012**
	1.98	2.69	2.52	2.00
IS	-0.0302***	-0.0548*	-0.0494	-0.0457
	-2.66	-1.78	-1.40	-1.26
Adj. R-squared	0.066	0.152	0.131	0.112
Observations	135	135	135	135

Panel B.

	(1)	(2)	(3)	(4)
	H1	H5	H10	H20
EPU	0.0005**	0.0016***	0.0018***	0.0018**
	2.21	2.96	2.66	2.32
VIX	-0.0017	-0.0043*	-0.0021	-0.002
	-1.29	-1.78	-0.78	-0.79
Adj. R-squared	-0.015	0.113	0.105	0.091
Observations	116	116	116	116

Table 9. Herding and economic policy uncertainty: Size breakdown

Time-series regressions of a herding measure (H) over stocks held by at 5 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. In columns (4) to (6), the specifications also include an interaction term between the index of economic policy uncertainty and Gallup's presidential net disapproval ratings (ND), as well as standalone net disapproval ratings as a control. The herding measure includes stocks with below-median ("Small") market capitalization in columns (1) and (4), stocks with above-median ("Big") market capitalization in columns (2) and (5), and the difference in herding between small and large stocks in columns (3) and (6). The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Dep. Var.: H5	(1)	(2)	(3)	(4)	(5)	(6)
	Small	Big	S−B	Small	Big	S−B
EPU	0.0016***	0.0009**	0.0007***	0.0018***	0.0010**	0.0008***
	3.64	2.09	2.88	3.77	2.25	3.59
EPU x ND				0.0024*	0.0013	0.0011**
				1.74	1.11	2.38
Adj. R-squared	0.140	0.205	0.234	0.147	0.207	0.246
Observations	135	135	135	135	135	135

Table 10. Herding and economic policy uncertainty: Political connections

Time-series regressions of a herding measure (H) over stocks held by at 5 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and a dummy variable that takes on value one of the U.S. president is a Democrat. In columns (4) to (6), the specifications also include an interaction term between the index of economic policy uncertainty and Gallup's presidential net disapproval ratings (ND), as well as standalone net disapproval ratings as a control. The herding measure includes stocks from companies whose headquarters are located in states that exhibit a different political affiliation from the White House ("Unconnected") in columns (1) and (4), and states aligned with the political affiliation of the presidency ("Connected") in columns (2) and (5). In columns (3) and (6), the dependent variable is the difference in herding between unconnected and connected stocks. The sample period is from the first quarter of 1985 through the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Dep. Var.: H5	(1)	(2)	(3)	(4)	(5)	(6)
	Unconnected	Connected	U−C	Unconnected	Connected	U−C
EPU	0.0018***	0.0013***	0.0005**	0.0020***	0.0016***	0.0004
	3.58	2.62	2.09	3.98	2.95	1.55
EPU x ND				0.0022	0.0031**	-0.0010**
				1.59	2.17	-2.04
Adj. R-squared	0.172	0.126	0.118	0.174	0.137	0.127
Observations	134	135	134	134	135	134

Table 11. Herding and economic policy uncertainty: Presidential affiliation

Time-series regressions of a herding measure (H) over stocks held by at 5 institutional traders, constructed using U.S. 13F institutional ownership quarterly data and following the methodology from Sias (2004), the U.S. economic policy uncertainty (EPU) index from Baker, Bloom, and Davis (2016), an interaction term between the economic policy uncertainty index and a dummy variable that takes on value one if the U.S. president is a Democrat, and a vector of financial, economic, and political controls. The financial controls include excess stock returns on the market portfolio over the quarter, retrieved from Kenneth French's website, along with average excess returns over the previous year, and the standard deviation of excess returns over the previous year. Economic controls include the growth in the industrial production index, growth in personal consumption expenditures on durables, nondurables, and services, growth in employment, and a dummy variable that takes on one for NBER recessions, all retrieved from the Bureau of Economic Analysis. The political controls include a set of dummy variables that take on value one for each of the U.S. president's term-years, and the Democrat dummy as a standalone variable. The dependent variable is the difference in herding between below- and above-median market capitalization in column (1), between politically sensitive and insensitive stocks in column (2), between stocks with an above- and below-median EPU beta in column (3), and with above- and below-median firm-level political risk in column (4). Politically sensitive stocks are defined as in Hong and Kostovetsky (2012), and firm-level political risk as in Hassan, Hollander, van Lent, and Tahoun (2019). The EPU beta is estimated for each stock in the sample through a three-year rolling window controlling for excess returns on the U.S. stock market portfolio. The sample period starts in the first quarter of 1985 in columns (1) and (2), in the first quarter of 1986 in column (3), and in the second quarter of 2002 in column (4), and ends in the fourth quarter of 2019. Heteroskedasticity- and autocorrelation-consistent t-stats are in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Dep. Var.: H5	(1)	(2)	(3)	(4)
	Size	Political Sensitivity	EPU Beta	Political Risk
EPU	0.0013***	0.0008*	0.0006***	0.0013**
	3.82	1.95	3.26	2.15
EPU x Democrat	-0.0010**	-0.0018***	-0.0006**	-0.0010*
	-2.11	-3.35	-2.36	-1.71
Adj. R-squared	0.257	0.076	0.106	0.045
Observations	135	135	131	67